

I Claim:

10. In a multi-base, multi-remote communications system including cellular radio systems wherein the remotes transmit in a first band and receive in a second band and the base sites transmit in said second band and receive in said first band to avoid duplex operation problems at both remote and base sites, a method of communicating between base site comprising the steps of:

a' a) placing nodes, herein referred to as blind nodes, between selected base sites, and having said blind nodes serve as band switching repeaters between said base sites;

b) designating the bands for operation of said blind nodes according to the following criteria;

i) selecting the blind node transmit band subject to the constraint that when the base sites receive signals from the blind nodes, such signals are not subject to duplex operation problems at the base site receivers when taking into consideration the band used by the base site for transmission to the remotes by selecting a different band for blind node transmission from the band used for base site transmission to remotes;

ii) selecting the base site band for transmission to the blind nodes subject to the constraint that the base sites will receive signals from the remotes without duplex

operation problems at the base site receivers by selecting a different band for base site transmission to the blind nodes than the band used for receiving signals from the remotes;

5           iii) selecting said band to transmit from the base sites to the blind nodes receivers and selecting said blind node transmit band to the base sites such that said blind node will not be subject to duplex operation problems by selecting said base transmit to blind node band to be different from the blind node transmit to base band;

10           iv) selecting said two bands for communication with said blind nodes such that the two bands are selected from said first remote to base band and said second base to remote band.

15           11. A multi-base, multi-remote communication system including cellular radio wherein the remotes transmit in a first band and receive in a second band and the base sites transmit in said second band and receive in said first band to avoid duplex operation problems at both remote and base sites; a system of call routing comprising:

20           a) routing tables to permit different destinations for different calls selectively based on number indications wherein such number indications include telephone numbers;

          b) multiple blind nodes that do not support direct base

to remote communication;

5 c) said blind nodes each having at least one transmitter such that said blind nodes are capable of simultaneously transmitting multiple transmissions in the band used for transmission by the remotes;

d) said blind nodes each having at least one receiver such that said blind nodes are capable of simultaneously receiving multiple transmissions in the band used for receiving the remotes;

10 e) said blind nodes each of which includes a combination of a least one transmitter and receiver capable of performing a repeating function that involves simultaneous reception and transmission of said multiple transmissions without duplex operating problems;

15 f) said base sites simultaneously communicating with multiple remotes and multiple blind nodes without duplex operating problems,

20 whereby the system can perform simultaneous base to remote and simultaneous communication and routing functions in two bands of frequencies.

12. A system as in claim 11 wherein at least one of the selected base sites that transmits to a blind node and at least one of the selected base sites that receives from said

blind node are geographically positioned within communication range of each other.

13. A system as in claim 11 further including  
5 directional antennas that are used to beam node to node communications thereby maximizing received signal strength.

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14. A system as in claim 11 further including testing  
10 means for dynamic signal to interference ratios as an aid to assigning channels.

15. A system as in claim 11, wherein the routes through nodes alternate between base sites and blind nodes.

15 16. A system as in claim 11 further including selection means for providing antenna patterns for node to node communication dependent upon actual received signal strength.

20 17. In a multi-node, multi-remote radio telephone system including cellular radio systems wherein the mobiles transmit in a first band and the bases transmit in a second band, a method of routing of call connection and call routing between nodes comprising,

a) using telephone number designations and routing

tables to select different routes for different calls;

b) utilizing antennas for communications between nodes,

c) selecting antenna patterns between nodes based on  
actual signal strength measurements; and

d) selecting a node-to-node route based on said actual  
signal strength of the selected antenna patterns.

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